WE CLAIM:

1. A pressure sensor, comprising:

an optical fiber emitting a light beam;

a beam to respond to changes in pressure;

a substrate having a first surface on which said beam is mounted and having a second surface opposite said first surface, said substrate defining an opening which is open from said second surface of said substrate, said optical fiber being mounted in said opening in said substrate to direct said light beam onto said beam; and

a junction in said substrate to receive a portion of said light beam which impinges said beam to drive said beam into vibration.

2. A pressure sensor as claimed in claim 1, further comprising:

a shell on said first surface of said substrate enclosing said beam, said shell having an evacuated interior space.

3. A pressure sensor as claimed in claim 1, wherein said optical fiber is positioned to direct said light beam through said junction prior to impinging said beam.

4. A pressure sensor as claimed in claim 1, wherein said substrate includes a layer of semiconductor on said first surface and a layer of insulator below said layer of semiconductor.

5. A pressure sensor as claimed in claim 1, wherein said beam of light is infra-red light.

6. A method for sensing pressure, comprising the steps of:

directing a beam of light through a junction in a semiconductor substrate and onto a beam;

providing an optical resonant cavity between said junction and said beam to impose a frequency on said beam of light;

vibrating said beam by electrostatic attraction between said junction and said beam;

varying a frequency of vibration by said beam by changes in pressure to effect changes in said beam of light; and

sensing said changes in said beam of light.

7. A method as claimed in claim 6, further comprising the step of:

providing a evacuated chamber within which said beam is mounted, said evacuated chamber having an outer shell defining an optical resonant cavity between said outer shell and said beam.

8. A method of making a pressure sensor, comprising the steps of:

forming a p-n junction on a first surface of a substrate;

forming a microstructure on a substrate over said p-n junction, said microstructure including a shell and a beam within said shell;

evacuating said shell;

forming an opening in a second surface of said substrate; and

positioning an optical fiber in said opening so as to direct a beam of light onto said beam and said p-n junction to thereby charge said p-n junction and drive said beam into vibration;

receiving light reflected from said beam, said light carrying a frequency of an optical resonant cavity formed between said p-n junction and said beam; and

subjecting said shell to pressure to vary said light reflected by said beam.